

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 3, 2016/2017

EME3186 – ERGONOMICS & HUMAN FACTORS
(ME & BE)

30 MAY 2017
9:00 a.m. - 11:00 a.m.
(2 Hours)

INSTRUCTIONS TO STUDENT

1. This Question paper consists of 4 pages including cover page with **4 Questions** only.
2. Attempt **FOUR** out of **FOUR** questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please write all your answers in the Answer Booklet provided.

Question 1

- (a) In the light of your knowledge in ergonomics, propose FIVE different designs which are ergonomically developed to cater for the population of pregnant women when they operate an automotive vehicle. Briefly discuss each of your design.

[15 marks]

- (b) You are assigned by your department head to prepare a training module on a particular subject. Propose the ergonomics guidelines that you would follow to design the text layout of your training module in which you will provide to the participants in the form of handouts during the training session. Assume the ages of the participants are in the range of 60 to 65 years old. Support your answer based on your understanding in ergonomics.

[10 marks]

Question 2

- (a) Hazardous substances have the potential, through being used at work, to harm the health or safety of persons in the workplace. What are the organizational preventive measures that can be done to reduce or eliminate the risk of the hazardous substances?

[8 marks]

- (b) A noise problem can be controlled by attacking the noise at the source, along its path from the source to the receiver and at the receiver. What are the commonly known methods of noise control?

[7 marks]

- (c) Direct glare can lead to discomfort, disability, and in some serious cases, blinding. In your opinion, what are the steps that could be taken to reduce direct glare from (i) luminaires, and (ii) windows?

[10 marks]

Continued...

Question 3

- (a) Climbing and descending stairways requires a combination of strength, balance, timing and equilibrium to avoid missteps, falls and consequent injury. Discuss the ergonomics considerations when designing stairways for children.

[8 marks]

- (b) Continuous lifting activity may increase strain on the body. Propose methods that can increase the time available for lifting.

[8 marks]

- (c) Using an appropriate diagram, elaborate the relationships between the type of work being performed for a standing work, work surface height and elbow height.

[9 marks]

Continued...

Question 4

- (a) Figure Q4(a) shows a hand sketch drawing of a woman sitting in two different positions while driving a car. By analyzing both the figures, find the net torque (in Nm) exerted on the shoulders at position A. Assume the distance from C to D to be 10cm. Given that the weight of the upper hand to be 4kg, lower arm to be 3kg and the hand to be 1.5kg respectively. Compare and comment on your answers obtained for the two different sitting positions.

[15 marks]

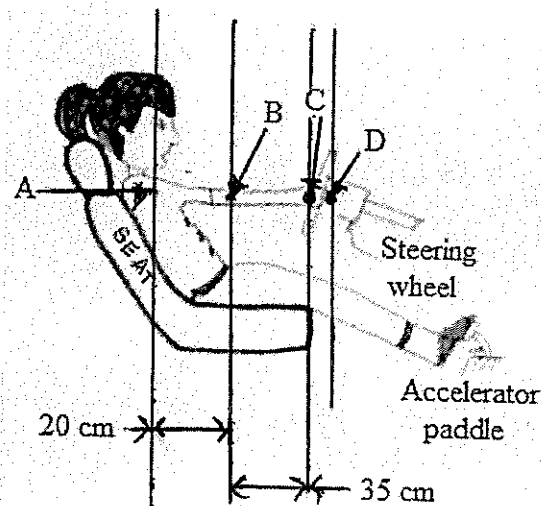


Figure Q4(a)(i)

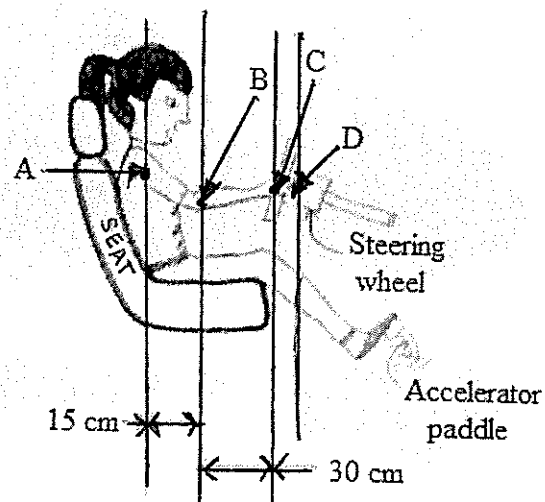


Figure Q4(a)(ii)

- (b) Figure Q4(b) shows a conventional key board used by the typist. By analyzing the figure and by means of a neat sketch, explain how can you minimize or eliminate the movement of the wrist of the typist.

[10 marks]

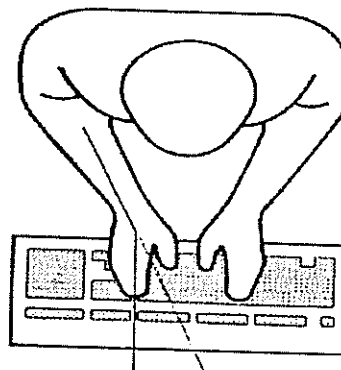


Figure Q4(b)

End of Paper